Reduction Analysis Instance based Learning for Knowledge Management in Machine Learning

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Abstract

The key challenges of knowledge management in dynamic developments are 'Ensuring Relevancy, Interpreting Data Efficiently'. Specific Instance Based Learning can improve the knowledge management process to store the relevant data effectively. Instance based learning improves the performance of knowledge acquisition and several learning algorithm. In this paper we describe the some specific issues during knowledge management at dynamic environment and use of instance-based-learning is the one of solution. Instance based learning concepts do not uphold any set of knowledge to derive for upcoming instance prediction. Although this concept and approach consider a broad view of nearest neighbor algorithm. We describe the classification and reduction of the noisy instances. Instance based learning stores the new facts as an instance every time which is more reliable and relevance.

Keywords: *Knowledge Management, Instance Based Learning, Knowledge acquisition, nearest neighbor algorithm.*

Introduction

The examples of instance based learning K-nearest neighbors, Radial Basis Function (RBF), simply supplies the new instances instead of old one. The ability to adopt the new data set and efficient comparison make this algorithm competitive over other learning algorithms. Instance based learning is a supervised learning technique based on labeled data, classification and regression.

The drawback of instance-based approaches is that the cost of classifying latest instances and it can be high with respect to complexity. Because of computational complexity that takes place at classification time rather than when the training examples are first encountered. That's why; techniques for competently indexing training examples are a considerable practical issue in reducing the computation required at query time. A second drawback is too many instance-based approaches, particularly nearest neighbor approaches, is that they reflect on all attributes of the instances when attempting to retrieve similar training examples from memory. If the target concept depends on only a few of the many available attributes, then the instances that are truly most "similar" may well be a large distance apart.

The k-NEAREST NEIGHBOR learning algorithm is widely-used approach. The locally weighted regression, a learning method that builds local approximations to the target function is s a generalization of k-NEAREST NEIGHBOR algorithms. The radial basis function networks, which make available a bridge between instance-based and neural network learning algorithms.

Machine Learning instance based method is employed to get better knowledge accuracy in each time. Multiple feature selection options evaluated for knowledge acquisition. As a final point of framework the captured facts are analyzed. The dynamic knowledge acquisition methods continually face the relevant knowledge findings.

Knowledge management capabilities and effects are represented by (figure 1) (Gold, 2001) it suggest the two main components that is structure and information-
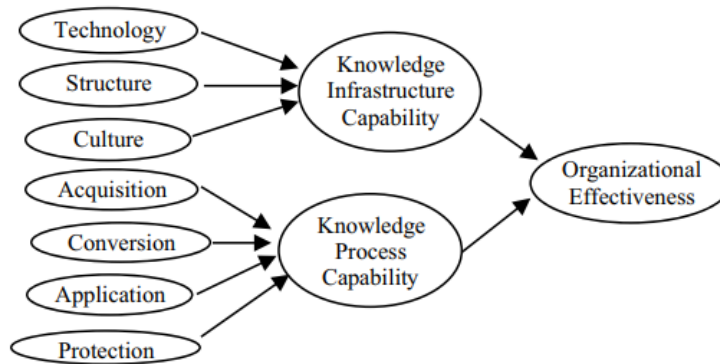
Figure 1: Knowledge management Hypothesis

History and Related Work

Knowledge acquisition process is difficult to gain appropriate knowledge (Naser, 2016; Al Shobaki,2016; Rivera,2016). For tacit information, knowledge management adopting fuzzy based , instance based machine learning (Albooyeh, 2019; Sani, 2019; Yazici, 2021). Efficent knowledge, effects, processes, and examining explored by many researchers (Kianto, 2016; Obeidat, 2016; Yusr, 2017).

Instance based learning example is nearest neighbor algorithm and classification where we quantify the distance between the objects. Distance function studied and researched function for many domains (S. Boriah,2008; J. Blitzer, 2005; D. Gunopulos2000; G. Salton,2004).

Major Components of Proposed Method

Knowledge Management Model:

Knowledge Management includes following key factors-
  (a) Knowledge Acquisition
  (b) Knowledge Assessment
  (c) Knowledge Creation
  (d) Knowledge Storing
  (e) Knowledge Sharing
  (f) Knowledge Application
Instance based knowledge management improves this model by storing the relevant information by comparing the better and competitive knowledge.
Machine learning instance agent based control flow for knowledge acquisition figure 1.

Instance Based Training Frame work:

A incremental learning task and synonims of nearest neighbore prototype classification (P. Cunningham, 2009). Here we are focusing on supervised learning means menas learning through identifed data or examples and acceptance of incrental instances. The algorithm framework includes-

1. Similarity function
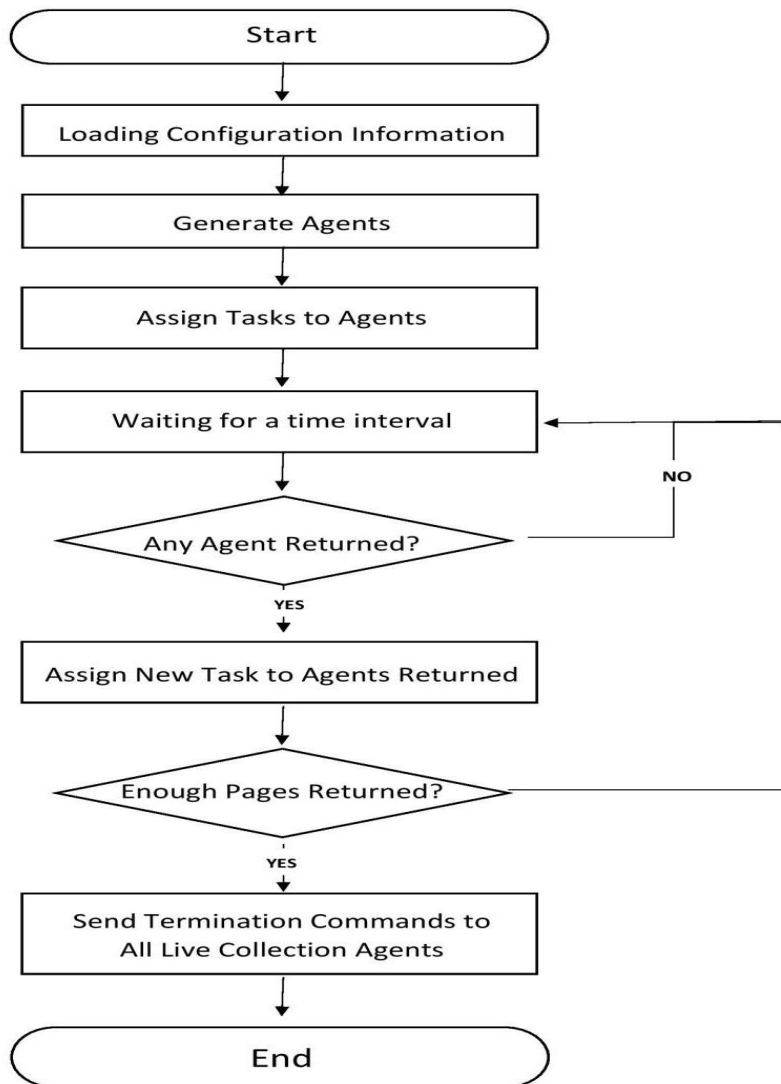2. Classifiation functios
3. Knowledge Updater Function

Figure 2: Agent control flow

Machine Learning instance based knowledge management key steps:

1. Obtaining examples: Labeled data for training process, later on application on unseen instances.
2. Selection of Appropriate features: Best classification to determine every individual instances data set.
3. Generating Data Set: 70% for training and 30% for testing.
4. Training the system: Labeled data set is supplied to machine and trained.
5. Testing: Evaluation of system performance.
6. Applying for unseen for different instances data set.

Performance Measure:

1. Representation and learnability
2. Classification Accuracy
3. Learning rate
4. Storage mechanism

Instance based Classification learning calculation:

Features vectors are represented as $\{a_1(x), a_2(x)\ldots\ldots a_n(x)\}$, where a_i represents / denotes the value of kth attribute of instance x. The mathematical representation of two instances is given by-

$d(x_i, x_j)=$

$$\sqrt{\sum_{k}^{n} \left(a_k(x_i) - a_k(x_j)\right)^2}$$

Discussion

The effective knowledge management depends on the process used to acquire the specific knowledge. Instance based knowledge acquisition have a great impact where dynamic information is useful. To identify the similar but different data set nearest neighbor algorithm one of the good solution. The classification learning formula used here is very familiar statistical calculation formula.

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